

**Shenzhen Global Test Service Co.,Ltd.**

1F, Building No. 13A, Zhonghaixin Science and Technology City, No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District, Shenzhen, Guangdong

RF Exposure evaluation**Report Reference No.....: GTSR16090082-02****FCC ID.....: 2AJZ5- IOBDC2**

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Date of issue.....: Oct. 10, 2016

Representative Laboratory Name ..: Shenzhen Global Test Service Co.,Ltd.

Address: 1F, Building No. 13A, Zhonghaixin Science and Technology City,
No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District,
Shenzhen, Guangdong

Applicant's name.....: Beijing CarSmart Technology Co.,LTD.

Address: Room 2112,19th Floor, Xueqing Road (Block B) No.38, Haidian
District, Beijing

Test specification

Standard: **47CFR §1.1310**
47CFR §2.1091

TRF Originator.....: Shenzhen Global Test Service Co.,Ltd.

Master TRF.....: Dated 2014-12

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Test item description Autofun Box

Trade Mark: /

Manufacturer: Dongguan Superior Manufacturing Technology Company Limited

Model/Type reference.....: iOBD-C2

Listed Models: /

Exposure category.....: General population/uncontrolled environment

EUT Type: Production Unit

Hardware Version: iOBD-C2_V1.5

Software Version: V1.2

Rating: DC 12V 80mA

Result.....: **PASS**

TEST REPORT

Test Report No. : GTSR16090082-02	Oct. 10, 2016 Date of issue
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Equipment under Test : Autofun Box

Model /Type : iOBD-C2

Listed Models : /

Applicant : **Beijing CarSmart Technology Co.,LTD.**

Address : Room 2112,19th Floor, Xueqing Road (Block B) No.38,
Haidian District, Beijing

Manufacturer : **Dongguan Superior Manufacturing Technology
Company Limited**

Address : No.2,2 of Hong Ye Road North,Tangxia Town,Dongguan
City,Guangdong, P.R. China

Test Result:	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

<input type="radio"/>	Power Cable	Length (m) :	/
<input type="radio"/>		Shield :	/
<input type="radio"/>		Detachable :	/

1.2. Note

	Test Standards	Reference Report
GPRS	FCC Part 22 FCC Part 24	GTSR16090082-01
EMF	47CFR §1.1310 47CFR §2.1091	GTSR16090082-02

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.

1F, Building No. 13A, Zhonghaixin Science and Technology City, No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District, Shenzhen, Guangdong

2.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 964637

Shenzhen Global Test Service Co.,Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 964637, Jul 24, 2015.

CNAS-Lab Code: L8169

Shenzhen Global Test Service Co.,Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories. Date of Registration: Dec. 11, 2015. Valid time is until Dec. 10, 2018.

2.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

3.3. Conducted Power Results

GSM 850		Burst-Average Conducted power (dBm)		
		Channel/Frequency(MHz)		
		128/824.2	190/836.6	251/848.8
GPRS (GMSK)	1TX slot	32.61	32.52	32.67
	2TX slot	30.12	30.54	30.47
	3TX slot	30.28	30.17	30.24
	4TX slot	29.34	29.41	29.62
GSM 1900		Burst Conducted power (dBm)		
		Channel/Frequency(MHz)		
		512/1850.2	661/1880	810/1909.8
GPRS (GMSK)	1TX slot	30.87	30.92	30.97
	2TX slot	29.45	29.38	29.62
	3TX slot	27.64	27.81	27.52
	4TX slot	27.09	27.34	27.28

Manufacturing tolerance

GSM 850 GPRS (GMSK) (Burst Average Power)				
Channel		251	190	128
1 Txslot	Target (dBm)	32.0	32.0	32.0
	Tolerance \pm (dB)	1	1	1
2 Txslot	Target (dBm)	30.0	30.0	30.0
	Tolerance \pm (dB)	1	1	1
3 Txslot	Target (dBm)	30.0	30.0	30.0
	Tolerance \pm (dB)	1	1	1
4 Txslot	Target (dBm)	29.0	29.0	29.0
	Tolerance \pm (dB)	1	1	1
GSM 1900 GPRS (GMSK) (Burst Average Power)				
Channel		810	661	512
1 Txslot	Target (dBm)	30.0	30.0	30.0
	Tolerance \pm (dB)	1	1	1
2 Txslot	Target (dBm)	29.0	29.0	29.0
	Tolerance \pm (dB)	1	1	1
3 Txslot	Target (dBm)	27.0	27.0	27.0
	Tolerance \pm (dB)	1	1	1
4 Txslot	Target (dBm)	27.0	27.0	27.0
	Tolerance \pm (dB)	1	1	1

3.4. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, $r = 20\text{cm}$, as well as the gain of the used antenna, and the power drift from Turn-up Procedure provide by manufacturer as following states, the RF power density can be obtained..

4. Evaluation Result**4.1. Standalone MPE**

	Minimum Separation Distance (cm)	Output Power (Turn-up Procedure)		Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm^2)	Power Density Limit (mW/cm^2)	Test Results
		dBm	mW				
GPRS 850	20	33	1995.26	0.8298	0.33	0.55	PASS
GPRS 1900	20	31	1258.93	0.7871	0.20	1.0	PASS

5. Conclusion

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

.....End of Report.....